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Table 5-1. Summary of Basin Management Objectives and Management Components. (*Under Development*)

Table 5-2
Summary of Proposed and Existing Monitoring Programs
Santa Rosa Plain Watershed

Parameter Monitored	Existing Program	Proposed Program
Groundwater Levels (variable monitoring frequency)	CASGEM - 36 private water wells, dedicated monitoring wells and inactive municipal supply wells	
	DWR – 27 private wells	
	PRMD - 10 public supply wells	
Groundwater Quality (varied sampling)		
Specific Conductance	DWR - ?? wells	
General Minerals	DWR - ?? wells	
Drinking Water Title 22 Analytes	Public & private water systems	
Land Surface Subsidence	3 Plate Boundary GPS Stations	
Surface Water	12 Streamflow Gauging Stations	
Rainfall Monitoring	15 Weather Stations	

Table 5-3
Summary of Existing Groundwater-Level Monitoring Wells
Santa Rosa Plain Watershed

SRP_ID	Well Type	Program	Well Depth Category
1	Private	CASGEM	<200
2	Private	CASGEM	<200
3	Private	CASGEM	<200
4	Private	CASGEM	200-500
5	Private	CASGEM	Unknown
6	Private	CASGEM	Unknown
7	Dedicated	CASGEM	Unknown
8	Dedicated	CASGEM	Unknown
9	Dedicated	CASGEM	<200
10	Dedicated	CASGEM	<200
11	Dedicated	CASGEM	<200
12	Dedicated	CASGEM	<200
13	Dedicated	CASGEM	<200
14	Dedicated	CASGEM	<200
15	Dedicated	CASGEM	<200
16	Dedicated	CASGEM	Unknown
17	Dedicated	CASGEM	Unknown
18	Dedicated	CASGEM	<200
19	Dedicated	CASGEM	<200
20	Dedicated	CASGEM	200-500
21	Dedicated	CASGEM	<200
22	Dedicated	CASGEM	<200
23	Dedicated	CASGEM	<200
24	Dedicated	CASGEM	<200
25	Dedicated	CASGEM	200-500
26	Dedicated	CASGEM	200-500
27	Dedicated	CASGEM	<200
28	Dedicated	CASGEM	Unknown
29	Dedicated	CASGEM	Unknown
30	Dedicated	CASGEM	Unknown
31	Inactive Municipal	CASGEM	Unknown
32	Inactive Municipal	CASGEM	>500
33	Inactive Municipal	CASGEM	200-500
34	Inactive Municipal	CASGEM	>500
35	Inactive Municipal	CASGEM	200-500
36	Inactive Municipal	CASGEM	Unknown
37	Private	DWR	Unknown
38	Private	DWR	Unknown
39	Private	DWR	<200
40	Private	DWR	<200
41	Private	DWR	<200
42	Private	DWR	<200
43	Private	DWR	>500
44	Private	DWR	<200

Table 5-3
Summary of Existing Groundwater-Level Monitoring Wells
Santa Rosa Plain Watershed

SRP_ID	Well Type	Program	Well Depth Category
45	Private	DWR	<200
46	Private	DWR	200-500
47	Private	DWR	200-500
48	Private	DWR	<200
49	Private	DWR	<200
50	Private	DWR	200-500
51	Private	DWR	200-500
52	Private	DWR	<200
53	Private	DWR	200-500
54	Private	DWR	<200
55	Private	DWR	<200
56	Private	DWR	<200
57	Private	DWR	<200
58	Private	DWR	<200
59	Private	DWR	<200
60	Private	DWR	<200
61	Private	DWR	Unknown
62	Private	DWR	Unknown
63	Private	DWR	Unknown
64	Public Supply	PRMD	Unknown
65	Public Supply	PRMD	Unknown
66	Public Supply	PRMD	Unknown
67	Public Supply	PRMD	Unknown
68	Public Supply	PRMD	Unknown
69	Public Supply	PRMD	Unknown
70	Public Supply	PRMD	Unknown
71	Public Supply	PRMD	200-500
72	Public Supply	PRMD	200-500
73	Public Supply	PRMD	200-500

Table 5-4
Summary of Existing Streamflow Gaging Stations
Santa Rosa Plain Watershed

Station ID	Station Name	Begin Date	End Date	Gage Active?
USGS 11465500	MARK WEST C NR WINDSOR CA	10/1/2006	4/30/2008	Inactive
USGS 11465660	COPELAND C A ROHNERT PARK CA	10/1/2006	Active	Active
USGS 11465680	LAGUNA DE SANTA ROSA A STONY PT RD NR COTATI CA	11/6/1998	Active	Active
USGS 11465690	COLGAN C NR SANTA ROSA CA	10/1/2006	Active	Active
USGS 11465700	COLGAN C NR SEBASTOPOL CA	11/7/1998	Active	Active
USGS 11465750	LAGUNA DE SANTA ROSA C NR SEBASTOPOL CA	11/18/1998	Active	Active
USGS 11466065	BRUSH C A SANTA ROSA CA	10/1/2005	4/30/2010	Inactive
USGS 11466170	MATANZAS C A SANTA ROSA CA	10/1/2004	Active	Active
USGS 11466200	SANTA ROSA C A SANTA ROSA CA	10/1/1939	Active	Active
USGS 11466320	SANTA ROSA C A WILLOWSIDE RD NR SANTA ROSA CA	12/9/1998	Active	Active
USGS 11466800	MARK WEST C NR MIRABEL HEIGHTS CA	10/1/2005	Active	Active
CEMAR MW 01	Mark West Creek below Tarwater Road	10/1/2010	Active	Active
CEMAR MW 02	Mark West Creek above Port Creek	9/25/2012	Active	Active
CEMAR MW 06	Mark West Creek at Neal Creek	9/25/2012	Active	Active

Table 5-5
Summary of Existing Rainfall Monitoring Stations
Santa Rosa Plain Watershed

ID	Active?	Data Source	Agency	Data Availability	Reporting Interval
KSTS	Yes	NWS Mesonet	NWS/FAA		Hourly
DW9521	Yes	NWS Mesonet	APRSWXNET/CWOP		5 Min
DW2144	Yes	NWS Mesonet	APRSWXNET/CWOP		15 Min
CW1766	Yes	NWS Mesonet	APRSWXNET/CWOP		15 Min
RSAC1	Yes	NWS Mesonet	RAWS		Hourly
CW6940	Yes	NWS Mesonet	APRSWXNET/CWOP		10 Min
CW3628	Yes	NWS Mesonet	APRSWXNET/CWOP		20 Min
DW9840	Yes	NWS Mesonet	APRSWXNET/CWOP		15 Min
CW0677	Yes	NWS Mesonet	APRSWXNET/CWOP		10 Min
KF6YUA	Yes	NWS Mesonet	APRSWXNET/CWOP		10 Min
Santa Rosa	Yes	NOAA	Earth System Research Laboratory		
Meachum LFI	Yes	NOAA	Earth System Research Laboratory		
CIMIS #158	Yes	UC Davis	CIMIS	12/24/2000 - on-going	Daily
CIMIS #83	Yes	UC Davis	CIMIS	2/14/1989 - on-going	Daily
NCDC #7965	Yes	UC Davis	NCDC	1/1/1951 - on-going	Daily
CIMIS #103	Yes	UC Davis	CIMIS	12/14/1990 - on-going	Daily

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TABLE 5-6. Planned Actions and Monitoring Program Priorities

PLANNED ACTION/PROJECT	RELATIVE COST	PROGRAM PRIORITY
GROUNDWATER LEVEL MONITORING		
1) Assess groundwater elevations on an annual basis for trends, conditions and adequacy of the groundwater level monitoring network.	\$	H
2) Develop an outreach program to obtain groundwater level data from volunteer private well owners, private producers,, and mutual water companies in the Plan Area.	\$	H
3) Coordinate with local, state and federal agencies to investigate opportunities to develop better information on groundwater level monitoring.	\$	H
4) Project – Conduct systematic, coordinated groundwater elevation monitoring: Establish and fund a Plan Area-wide, standardized, long-term monitoring well network. Select an appropriate group of wells (both public supply and volunteer private wells) to begin monitoring groundwater elevations through cooperative and volunteer efforts for groundwater elevations.	\$\$	H
5) Project – Install new multi-depth groundwater monitoring wells project: Obtain funding and install new multi-depth monitoring wells in the Plan Area for long-term monitoring of groundwater levels and groundwater quality.	\$\$\$	M
GROUNDWATER QUALITY MONITORING		
1) Assess water quality on an annual or biennial basis for trends, conditions and adequacy of the groundwater quality monitoring network.	\$	H
2) Identify opportunities to capture and integrate existing water quality data for areas where current data is insufficient, including contributions from the DPH, small water distribution system operators (wineries, restaurants, schools and parks), mutual water companies (non-urban residential subdivisions), and other entities.	\$	M
3) Integrate other monitoring programs established through efforts such as the NCRWQCB Dairy Program and the Salt and Nutrient Management Plan for the Santa Rosa Plain.	\$	M

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4) Project – Conduct groundwater quality monitoring: Establish and fund a basin-wide, standardized, coordinated, long-term groundwater quality monitoring network, in conjunction with groundwater level monitoring. Consider selecting an appropriate group of wells (both public supply and volunteer private wells) to monitor through cooperative and volunteer efforts in spring 2013 for groundwater quality.	\$\$\$	M
INELASTIC LAND SURFACE SUBSIDENCE		
1. Identify the available data related to potential inelastic land subsidence due to groundwater extraction in the Plan Area: a) Existing survey data b) Plate Boundary Observatory (PBO) GPS Stations c) Other data such as records of infrastructure failures potentially associated with subsidence, such as hardscape cracking, well casing failures, damaged pipelines etc.).	\$	M
2. Evaluate potential benchmark locations for periodic monitoring program of subsidence related groundwater extraction related to land subsidence in the Plan Area: Discuss and coordinate among the Agency, Cotati, Rohnert Park, Santa Rosa, Sebastopol, Windsor to determine whether there are other suitable benchmark locations and/or supply wells in the Plan Area to aid in the analysis of potential land subsidence.	\$	M
3. Develop monitoring program and network for assessing the potential for inelastic land subsidence due to groundwater extraction and documenting long-term land surface elevation changes to determine whether such changes are elastic and/or inelastic. Potential components could include: a) Semiannual surveying of a network of benchmarks and other survey points in areas where previous data and/or groundwater-level declines within confined aquifer zones suggest the potential for subsidence. b) Continued monitoring of sites recorded and reported through the existing PBO GPS stations.	\$	M

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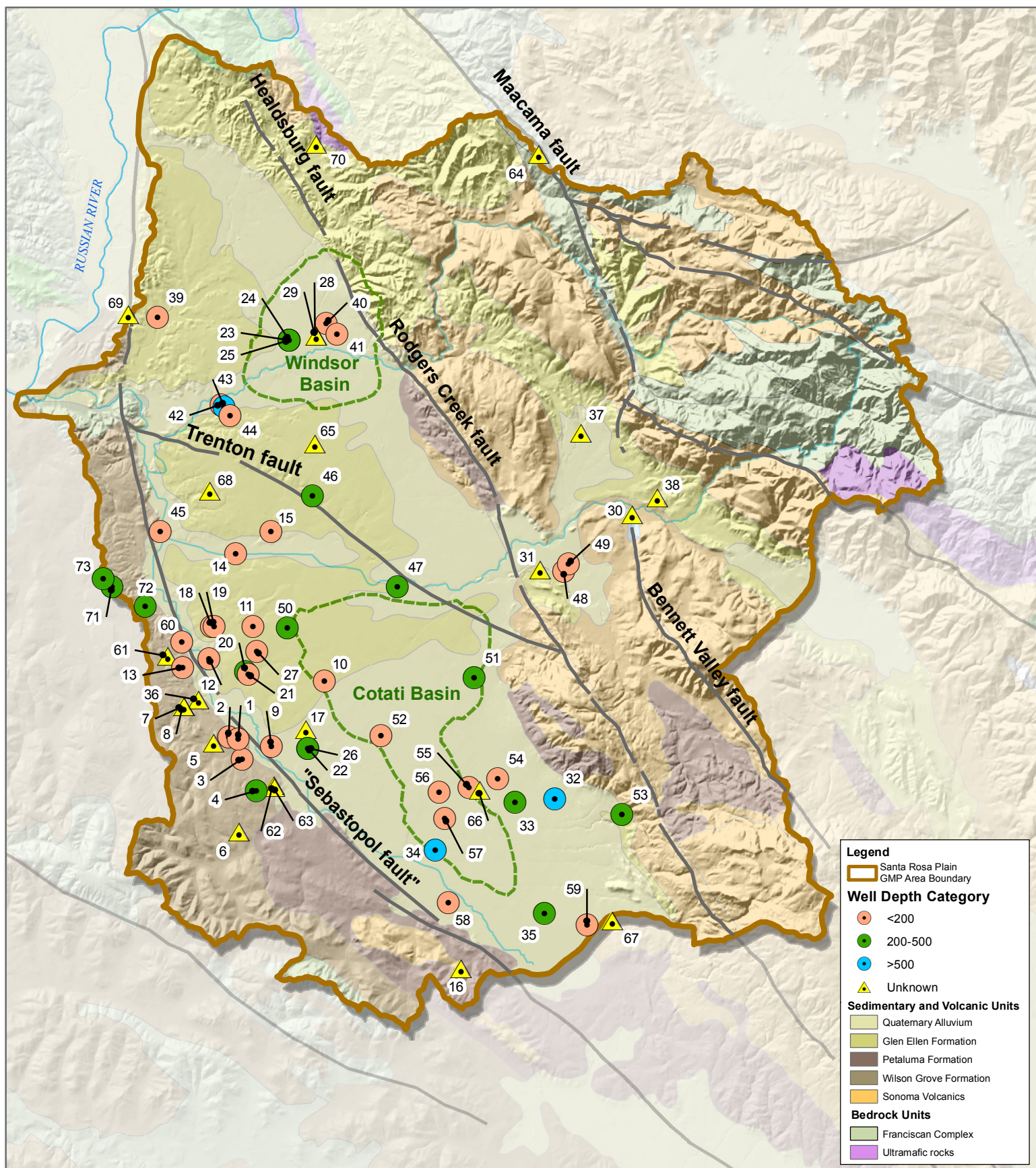
SURFACE WATER-GROUNDWATER INTERACTION MONITORING		
1. Continue to compile available stream gauge data and information on tributary flows in the Plan Area.	\$	H
2. Collect and analyze stream gauge data to evaluate potential stormwater capture projects.	\$	M
3. Determine current surface water quality sampling being conducted in the Plan Area.	\$	H
4. Incorporate water quality sampling of high flow surface water and storm water flows on project specific basis for recharge.	\$	H
5. Project – Conduct seepage runs along major watercourses: Conduct seepage runs to further assess surface water and groundwater interactions. Correlate groundwater level data from wells in the vicinity of stream gauges to further establish connectivity of the creek water and groundwater.	\$	H
6. Project – Analyze and as Necessary Re-Activate Existing Stream Gauges and Install New Gauges in the Plan Area: Three stream gauging stations that measure discharge and stage in the Plan Area would be analyzed for priority and need of evaluating water budget and surface water-groundwater interaction evaluation purposes Stream gauges would be re-activated or added based on need and usability.	\$\$	H
7. Project – Stable Isotope Study to Understand Surface Water-Groundwater Flow: Analyze existing and collect new surface water and groundwater samples for isotopic and other natural or anthropogenic tracers to evaluate surface water and groundwater interactions.	\$\$	M
8. Project –Install new wells along major watercourses: Install new wells along major watercourses to further assess surface water and groundwater interactions.	\$\$\$	M
RAINFALL MONITORING		
1. Develop a protocol and work plan for compiling rainfall data on a water year basis to develop isohyetal maps as warranted, compare with groundwater level trends, periodic GMP reports and update the model.	\$	H
2. Evaluate rainfall data distribution and determine the need for additional data; consider CoCoRAS for possible rainfall monitoring station expansion, and develop plans for	\$	H

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future efforts.		
MONITORING PROTOCOLS		
1. Develop a schedule to coordinate the time of sampling and the sampling interval (time between samples) to ensure data collection frequency.	\$	H
2. Coordinate the various existing and planned monitoring efforts to ensure uniform, standard water quality data collection protocols are followed.	\$	H
3. Use a Standard Operating Procedure (SOP) for the collection of groundwater level data for wells (Appendix).	\$	H
4. Provide DPH guidelines on the collection, pretreatment, storage, and transportation of water samples intended for water quality analyses (Appendix).	\$	H
5. Develop field and office quality assurance practices for the program. For individual future studies in the Plan Area, review project-specific quality assurance/quality control procedures for collecting groundwater quality samples.	\$	H
6. At the onset of the GMP monitoring program, prepare and distribute a stand-alone Sampling and Analysis Plan incorporating the management program component elements for use by monitoring organizations.	\$	H
7. Provide training on water level sampling to volunteer well owners as needed.	\$	H
DATA MANAGEMENT		
1. Maintain and update the central GIS data management system including GIS layers and other data formats related to groundwater, hydrology, geology, land use, and relevant imagery.	\$	H
2. Maintain well log data confidentiality per requirement of Water Code, Division 7, Chapter 10, Article 3, Section 13752.	\$	H
3. Work with cooperating agencies, including DWR, Cotati, Rohnert Park, Santa Rosa, Sebastopol, Windsor, PRMD, and any other non-governmental entity, to provide data for updating the database periodically.	\$	H

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4. Adopt flexible, standard formats for data collection, data transfer protocols, data reporting, and quality assurance-quality control checks to facilitate regularly scheduled data.	\$	H
5. Use the GIS data management system to assist in periodic data evaluations and prepare the Periodic Plan report summarizing groundwater conditions within the Plan Area and documenting groundwater management activities conducted in the previous year.	\$\$	H
6. Project- Aquifer and Well Data Compilation - Compile, screen and review State Department of Public Health, DWR Well Logs and PRMD records as an additional data source, especially for aquifer test data and parameters, for improved aquifer parameterization and maps.	\$\$	M
7. Project - Additional GIS Layers and Analysis: Develop and coordinate related data including GIS layers and other data formats on topics including low flow conditions, recharge and discharge areas, impervious areas, land cover, drainage networks, historical hydrology and land cover, seasonal springs and areas of seepage, and wetlands distribution.	\$\$	M



Santa Rosa Plain Watershed
Groundwater Monitoring Wells

0 1 2 4 Miles

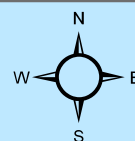
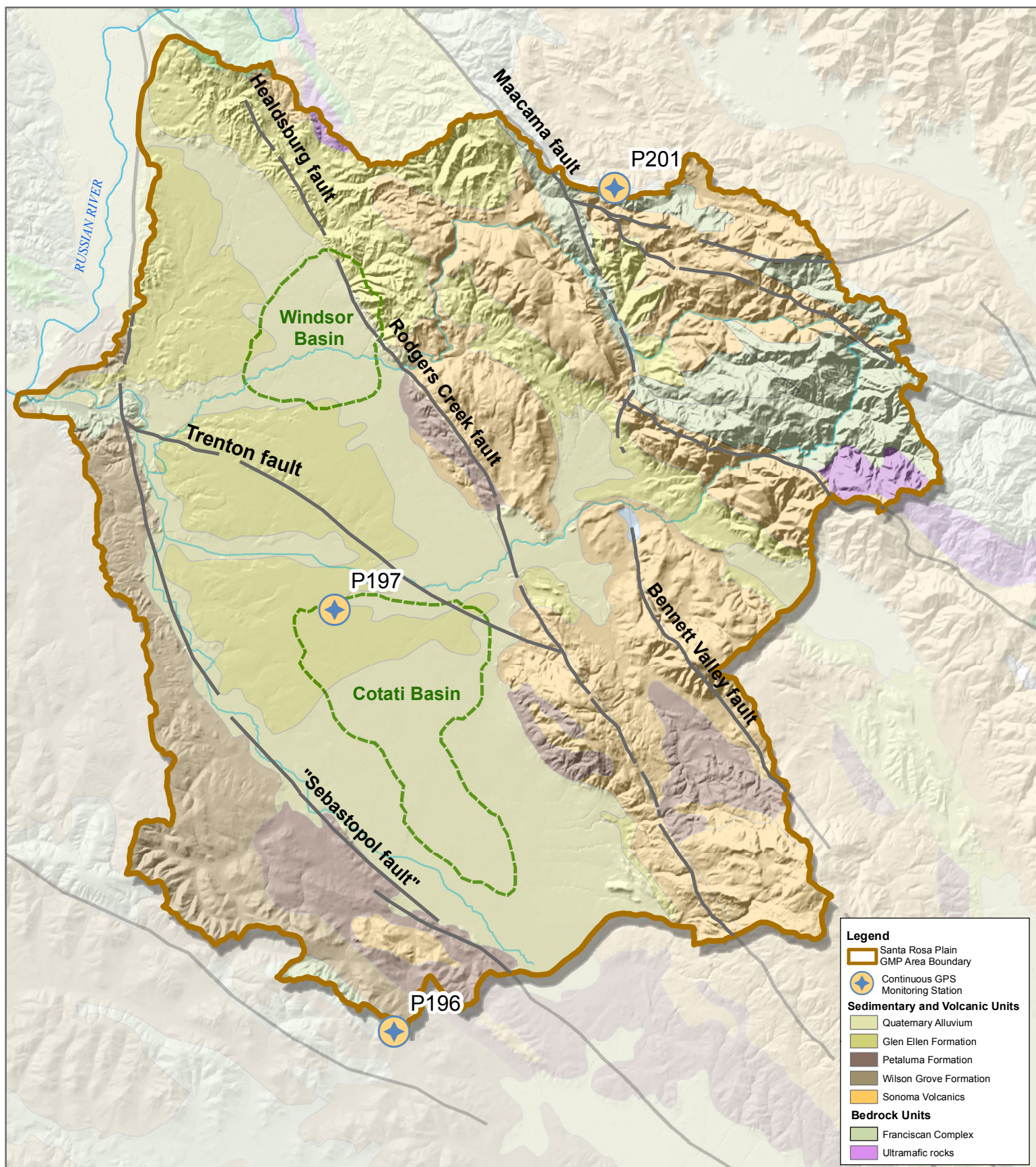


Figure
5-1

Figure 5-2. Groundwater Quality Monitoring Wells, Santa Rosa Plan Watershed. (*Under Development*)



Santa Rosa Plain Watershed
Ground Surface Monitoring Stations

0 1 2 4 Miles

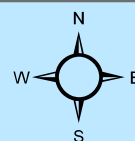
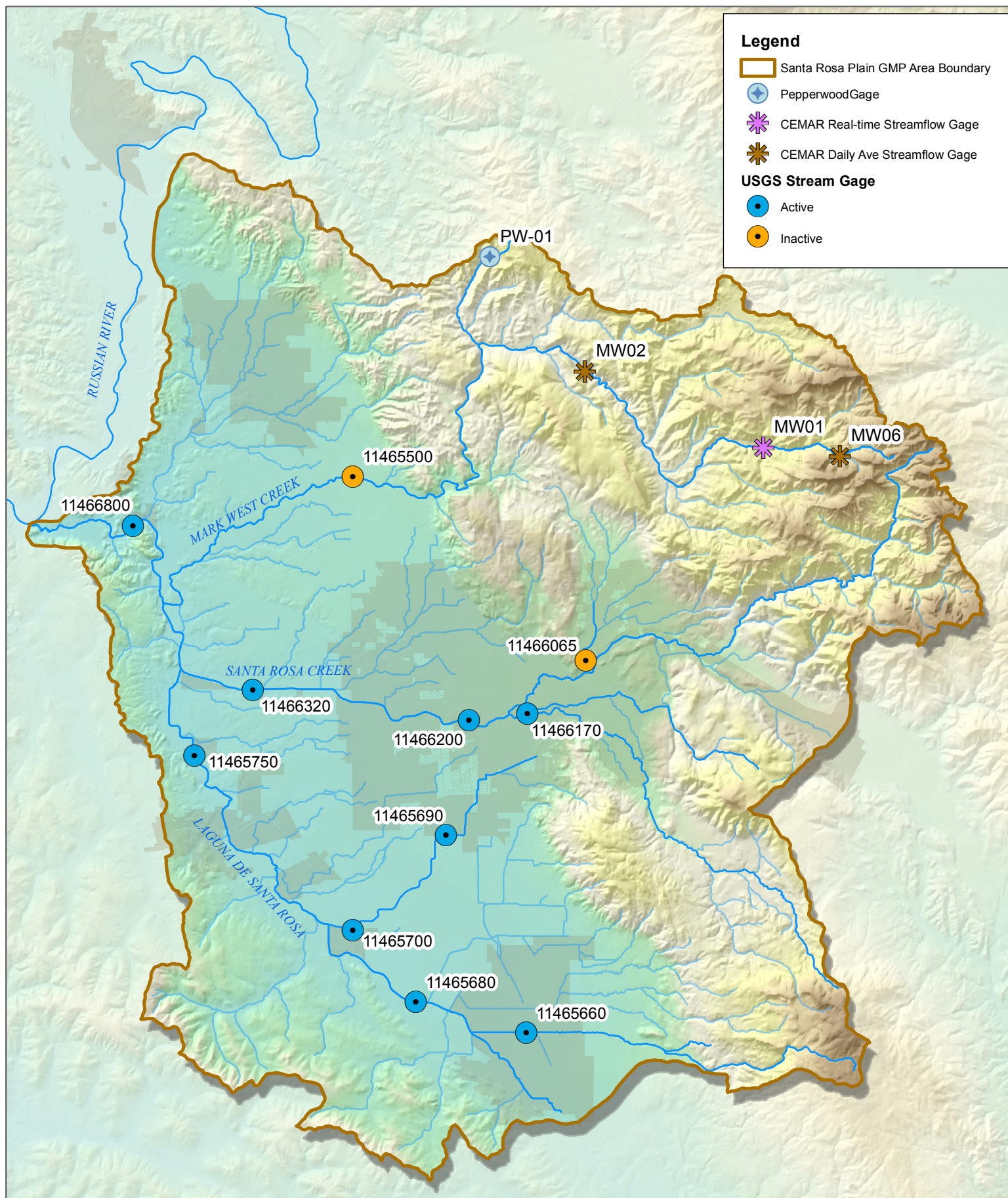


Figure
5-3



Santa Rosa Plain Watershed
Hydrological Monitoring Stations

0 1.25 2.5 5 Miles

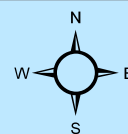
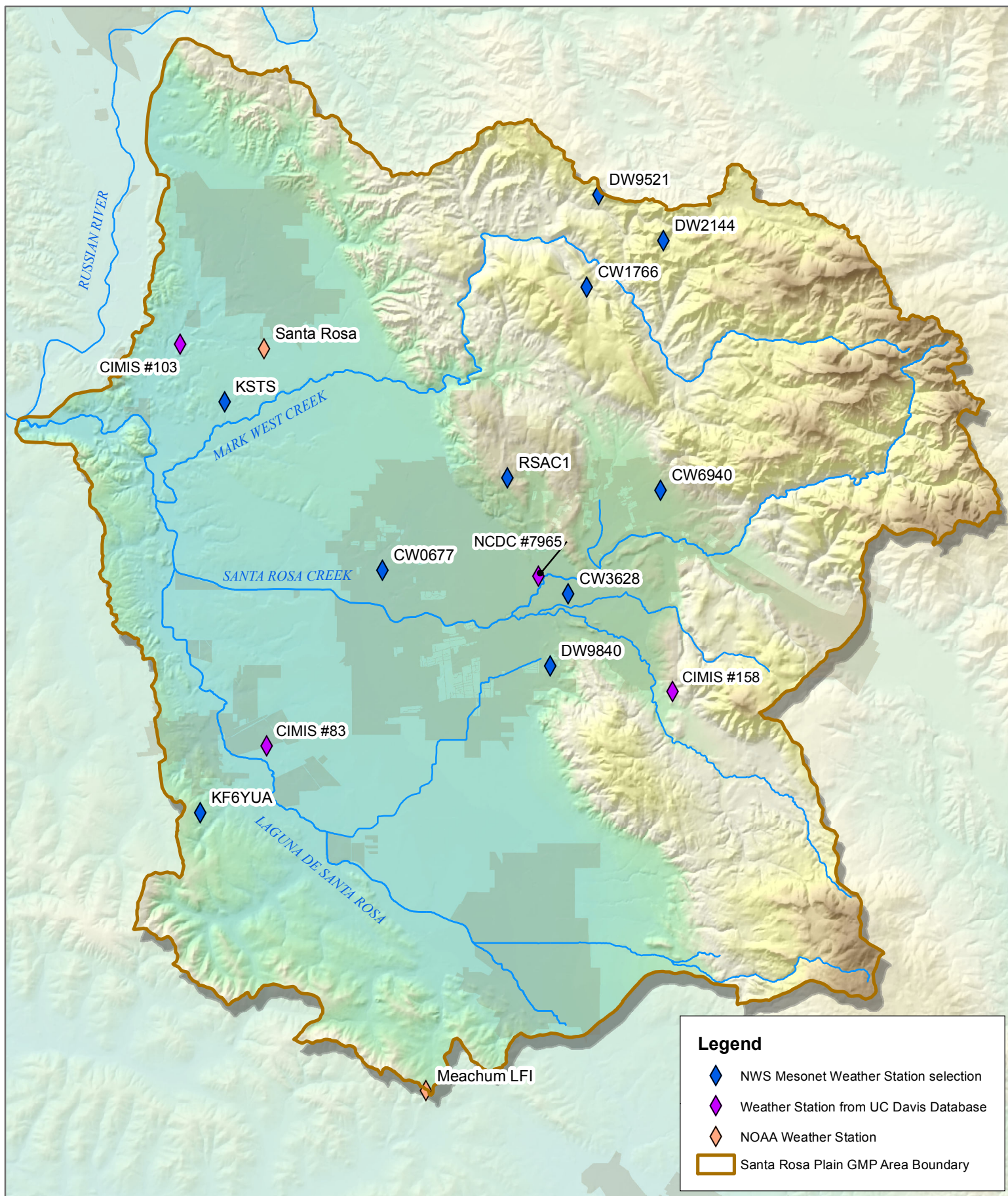


Figure
5-4



Santa Rosa Plain Watershed
Meteorological Monitoring Stations

0 1 2 4 Miles

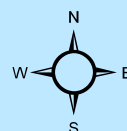


Figure
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